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Preventing BLACK ROT LOSSES in SWEETPOTATOES

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Importance of Recognizing Black Rot

Sweetpotato growers and handlers in this country still suffer heavy losses—millions of dollars each year—from black rot. This disease is found in all sweetpotato-growing sections. It attacks all varieties of sweetpotatoes.

Much of the loss occurs during shipment or in storage and marketing. You may grow and harvest a good crop of sweetpotatoes and provide expensive storage for them, and still you may have to throw out a large part of the crop because of black rot damage. Even if the crop is shipped directly to market, black rot may cause serious loss from spoilage.

Black rot of sweetpotatoes, however, is preventable. After the disease appears it is necessary to follow preventive methods rigidly every year until the causal fungus has been eradicated from the planting stock and from the soil.

Black rot is caused by a fungus, *Endoconidiophora fimbriata.* This fungus is as bad as its name sounds. It may cause black rot on any of the underground parts of the sweetpotato plant. The firm, shallow spots it causes on the roots make the disease easily recognizable. In the early stages these shallow spots are circular and brown. As they enlarge they become greenish black to black. (See cover illustration.) Often small, black bristles (the fruiting bodies of the fungus) appear on the spots. The flesh beneath the spots also is greenish black or black. The decayed part, as well as the apparently sound flesh next to it, tastes bitter. The presence of the rot destroys the food value of sweetpotatoes. Also, the sale of black-rotted sweetpotatoes has a bad effect on the market demand.

Prevention of Black Rot in the Growing Crop

Prevention of black rot must start in the plant bed. If your hotbed has been used before, remove the soil, sand, etc. Clean and wash the sides and bottom of the framework with a disinfectant. A solution of 1 pound of bluestone (copper sulfate) dissolved in 6 gallons of water or of 1 pint of commercial formaldehyde in 3 gallons of water may be used. After being washed, the framework should dry overnight before the hotbed is filled.

If possible, use soil or sand from a plot on which sweetpotatoes have not been grown. If you do not have such a plot, use soil on which sweetpotatoes have not been grown for 3 or 4 years.

Propagating by means of vine cuttings or sprout (bed) cuttings is a practical and efficient way to eliminate black rot from the bedding stock. Since black rot affects only the plant parts that are below ground, vine and sprout cuttings will be free of the disease. Vine cuttings are usually made from plants grown from early-bedded sweetpotatoes. Sprout (bed) cuttings are made by cutting the sprouts about 1 inch above the ground level instead of pulling them as is usually done.

The first year you may prefer to save labor by growing only enough sweetpotatoes from vine cuttings to provide planting stock for a small bed. The next year a patch that will provide enough bedding stock to supply all the plants needed can be planted from these disease-free sweetpotatoes. Either vine or sprout cuttings may be planted directly in the field if there is enough soil moisture or if they are set with water.

As an added precaution, the bedding stock may be surface-disinfected before it is bedded by soaking it for 10 minutes in a solution of 4 ounces of corrosive sublimate (mercuric chloride) or 6 pounds of borax in 30 gallons of water. Whichever chemical is used, it should be thoroughly dissolved. Since these chemicals dissolve slowly in cold water, the solution is most easily prepared by dissolving the chemical in a small amount of hot water and adding the concentrated solution to enough cold water to make 30 gallons. About 1 pint of boiling water is necessary to dissolve 4 ounces of corrosive sublimate and 3 gallons to dissolve 6 pounds of borax. Do not treat the sweetpotatoes until the diluted solution is cool. The borax solution may be prepared and used in any convenient type of container, but the corrosive sublimate solution must not be prepared or used in metal containers. *The borax and corrosive sublimate solutions are toxic to plants and should not be thrown where crops are to be grown.*

Disinfectants, especially corrosive sublimate, are very poisonous. Sweetpotatoes treated with them should never be used as human food or fed to animals. The solution left after treatment should be carefully disposed of or kept out of the reach of children and animals.

Sweetpotatoes should not be left in the treating solutions longer than 10 minutes, and they should be bedded and the bed watered promptly after treatment. If sweetpotatoes are treated longer or the bed is not promptly watered, the yield of sprouts may be reduced.

The plants should be set out on new ground or on soil that has not produced sweetpotatoes for several years. It is wasted effort to grow healthy plants and then set them in fields infested with the black rot fungus. Rotation of crops helps to control black rot because the fungus that causes black rot does not attack other farm crops.

Keep in mind that black rot is easily spread. It is spread by cultivation of the sweetpotatoes and later by digging, washing, and packing them.

Sanitation in the Storage House

Keeping the packing shed and storage house clean will help a lot in controlling black rot. Clean the floor frequently during packing and storing. Pick up all crushed and rotting sweetpotatoes that drop from the baskets. Such material should never be dumped on manure piles or hauled to the sweetpotato field.

As soon as the crop is shipped the storage house should be cleaned thoroughly. Make sure that rotting sweetpotatoes and other trash that might carry the black rot fungus are cleaned out. None of the trash should be dumped where sweetpotatoes are to be grown, on manure piles, or where drainage from the dump would flow onto a sweetpotato field.

Handling the Crop When Black Rot Is Present

If black rot is present at digging time, you may be sure that it will continue to develop in storage. If you have to throw out sweetpotatoes because of black rot at digging time, you will have others to throw out by the end of the curing period and additional ones by the end of the storage season.

Many of the infections that develop during curing and storage are actually present before digging, but the spots do not show up until later. Infections that start during curing and storing could come from contaminated soil sticking to the sweetpotatoes at digging time. Grow a crop of healthy sweetpotatoes if you expect to store them satisfactorily.

When black rot is present, it is probably best to cure the sweetpotatoes at 85° F. and at a high humidity for 5 to 10 days before shipment. This will allow time for the development of much of the rot that would otherwise show up in transit, and the diseased sweetpotatoes can be sorted out before shipping. This will save the money that would otherwise have to be paid for freight on black-rot-damaged sweetpotatoes.

Of course, you may be able to ship sweetpotatoes without curing to a local or nearby market for *immediate* consumption. If, however, these sweetpotatoes are not eaten at once, black rot will continue to develop and the dealer or housewife will suffer a loss.

Washing of black-rot-infected sweetpotatoes should be avoided, as it may readily spread the disease from infected potatoes to sound ones. Potatoes infected during washing frequently develop black rot before they can reach the market and can be consumed. It is best not to wash sweetpotatoes that are from a crop in which any black rot is present.

Practical Recommendations

It is not hard to prevent black rot of sweetpotatoes, but care and patience are needed. The continued use of the recommendations given in this leaflet should wipe out black rot if they are carefully followed. The observance of the following precautions should give a good return in dollars and cents for your time and effort.

1. *Clean the storage house thoroughly as soon as it is emptied.*
2. *Clean up all crushed sweetpotatoes and other trash around the storage house.*
3. *Clean and disinfect the framework of the plant bed.*
4. *Use clean bedding soil or sand.*
5. *Bed only sweetpotatoes that are free of black rot.*
6. *Disinfect the bedding stock.*
7. *Grow bedding stock from vine or sprout cuttings in a special plot.*
8. *Rotate sweetpotatoes with other crops. Do not plant on contaminated land.*
9. *When black rot is present the sweetpotatoes should be marketed promptly as fresh stock for immediate consumption. Do not store or wash.*
10. *Remember that black rot will be spread if black rot potatoes are washed.*

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